
VI. Recommendations

This section of the 2004 Roads Analysis document presents the process used to arrive at road related recommendations. The maps shown in this section are from one example area in the Cascade Mountains area of the Rogue River National Forest. Each of the four Roads Analysis areas discussed in this document have separate sets of maps with similar (but not identical) representation of the factors for that area.

This analysis recommends a set of factors for use by project planning teams to assess consistently the environmental costs and access benefits regarding the forest road system. In this process, the sub-watersheds (6th field HUCs) are rated low, medium, and high for environmental concerns (Map VI-1). A recommended response to the public comment, and a recommendation regarding a process for the project interdisciplinary team to use are described below. This analysis process provides a great deal of information in an organized fashion to provide project teams and line officers the ability to reach road management decisions in a more informed manner.

A. Response to Public Comment

Public comment varied greatly from advocating that the Forests should keep all roads open to lists of roads that should be closed. Many recommendations were received regarding methods to lower maintenance costs and identification of natural resource concerns. Many comments are specific to a road or area. Project teams assessing road management and road management decision makers should review the public comments specific to their Roads Analysis area during the assessment or planning stages. Appendix B contains a synopsis of public comments received for each Roads Analysis area during the public involvement process.

B. Use of Information Contained in This Analysis

This analysis effort has generated many products of geographic information in electronic form (GIS). This information describes the environmental costs and the access benefits related to the forest road system. Most (but not all) of the GIS coverages are listed below.

Environmental Costs:

- Road-stream crossings
- TES species proximity to roads
- Road density
- Geologic hazard zones
- Fish passage barriers
- Road proximity to old growth and mature habitat
- Key Watersheds
- Road proximity to streams
- Big Game Winter Range

Access benefits:

- Recreation developed sites
- Recreation dispersed sites
- Trailheads
- Vegetation condition class
- Fire occurrence and risk areas
- Late-Successional Reserve vegetation management priorities
- Road maintenance levels

Recommended GIS and analytical products (for use in project planning):

Sub-watershed low, medium, and high **Environmental Cost Rating** (Map VI-1)

Summary; low, medium, & high **Access and Environmental Rating by Road Segment** (Map VI-2)

Low, medium, and high **Aquatic Environmental Concerns** by road segment (Map VI-3)

Low, medium, and high **Terrestrial Wildlife Environmental Concerns** by road segment (Map VI-4)

Low, medium, and high **Vegetation and Cost Share Access Needs** by road segment (Map VI-5)

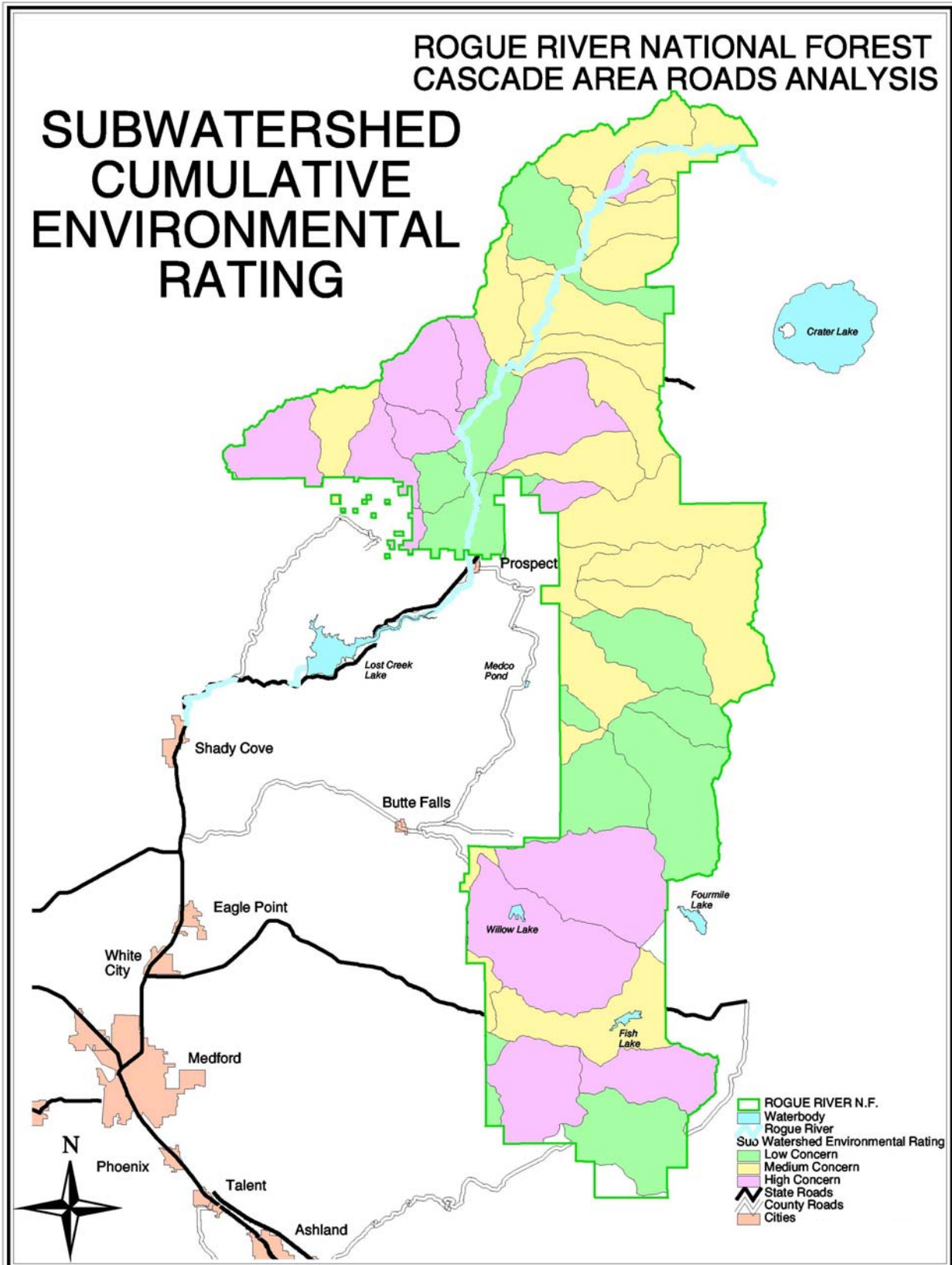
Low, medium, and high **Fire and Recreation Access Needs** by road segment (Map VI-6)

Example **Rating Process for Environmental Costs** (Table VI-1)

Example **Rating Process for Access Benefits** (Table VI-2)

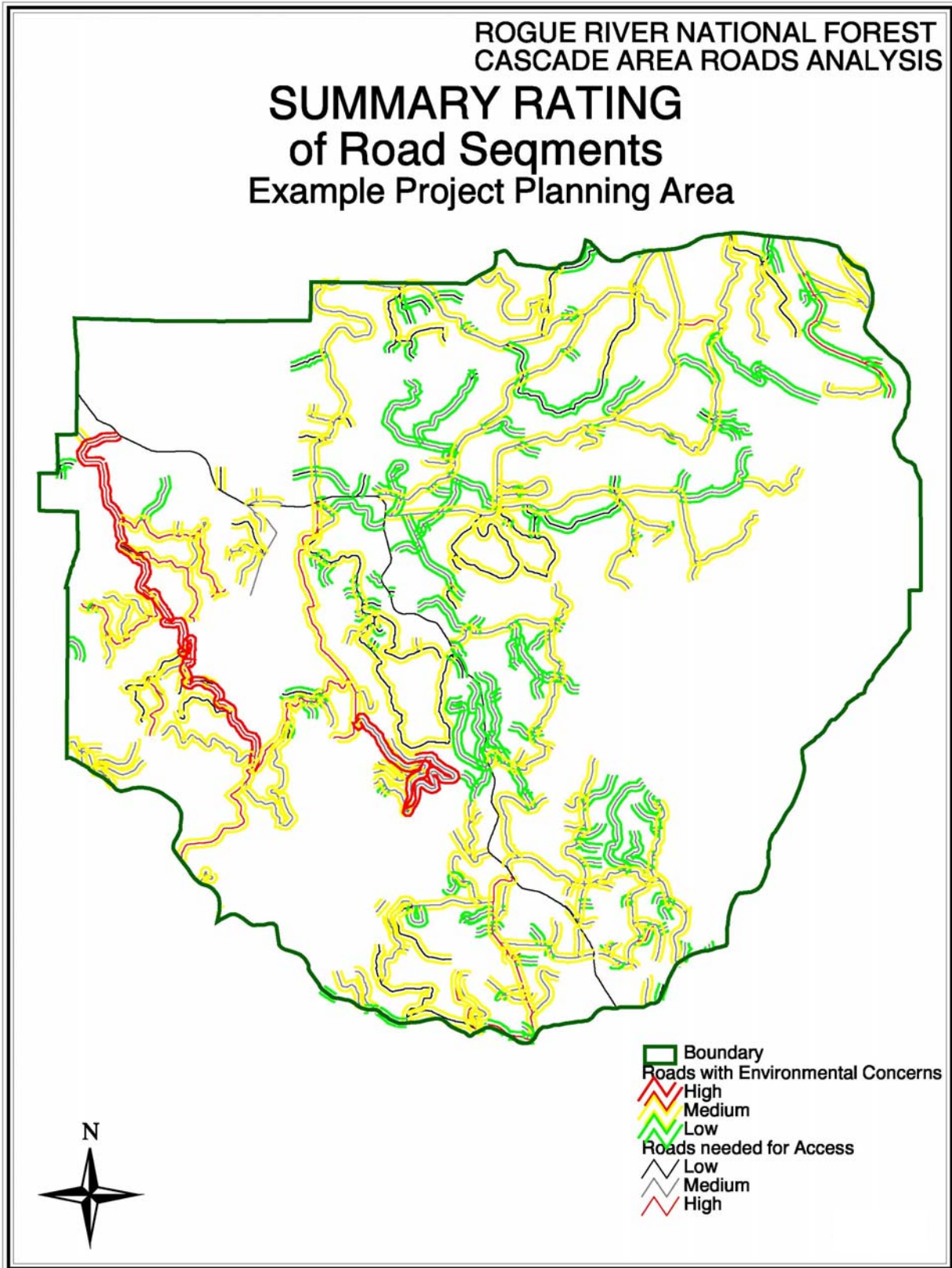
As noted, the example maps and tables shown in this section are from one example area in the Cascade Mountain portion of the Rogue River National Forest. Each of the four roads analysis areas discussed in this document have separate sets of maps with similar representation of the factors for that area. The example maps shown are not easily useable at this scale, and are provided only to aid in the understanding of some of the GIS products available. Better detail can be seen at larger scales.

MAP VI-1. Example
Sub-watershed Environmental Cost Rating - Cascade Area

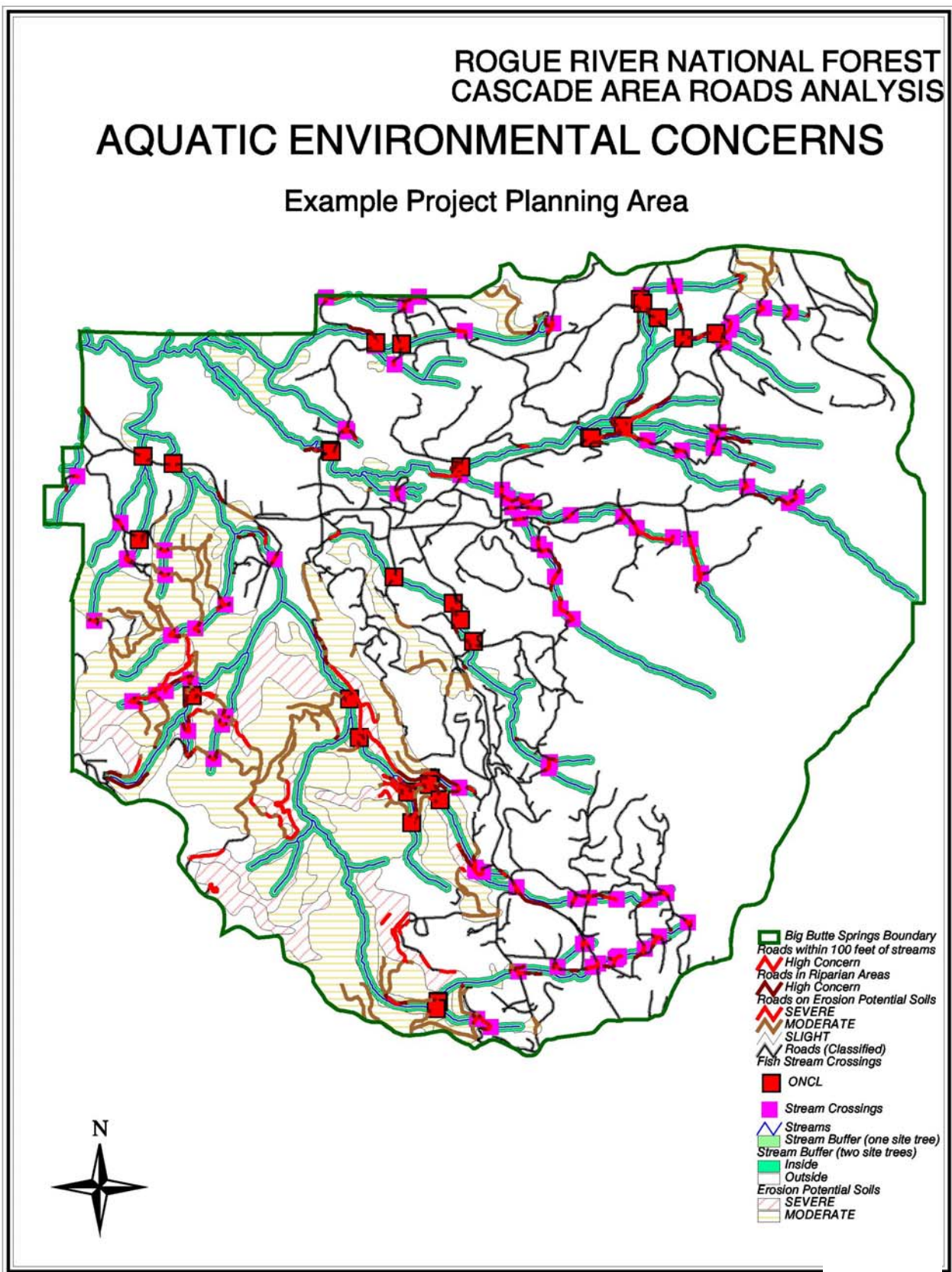


MAP VI-2. Example

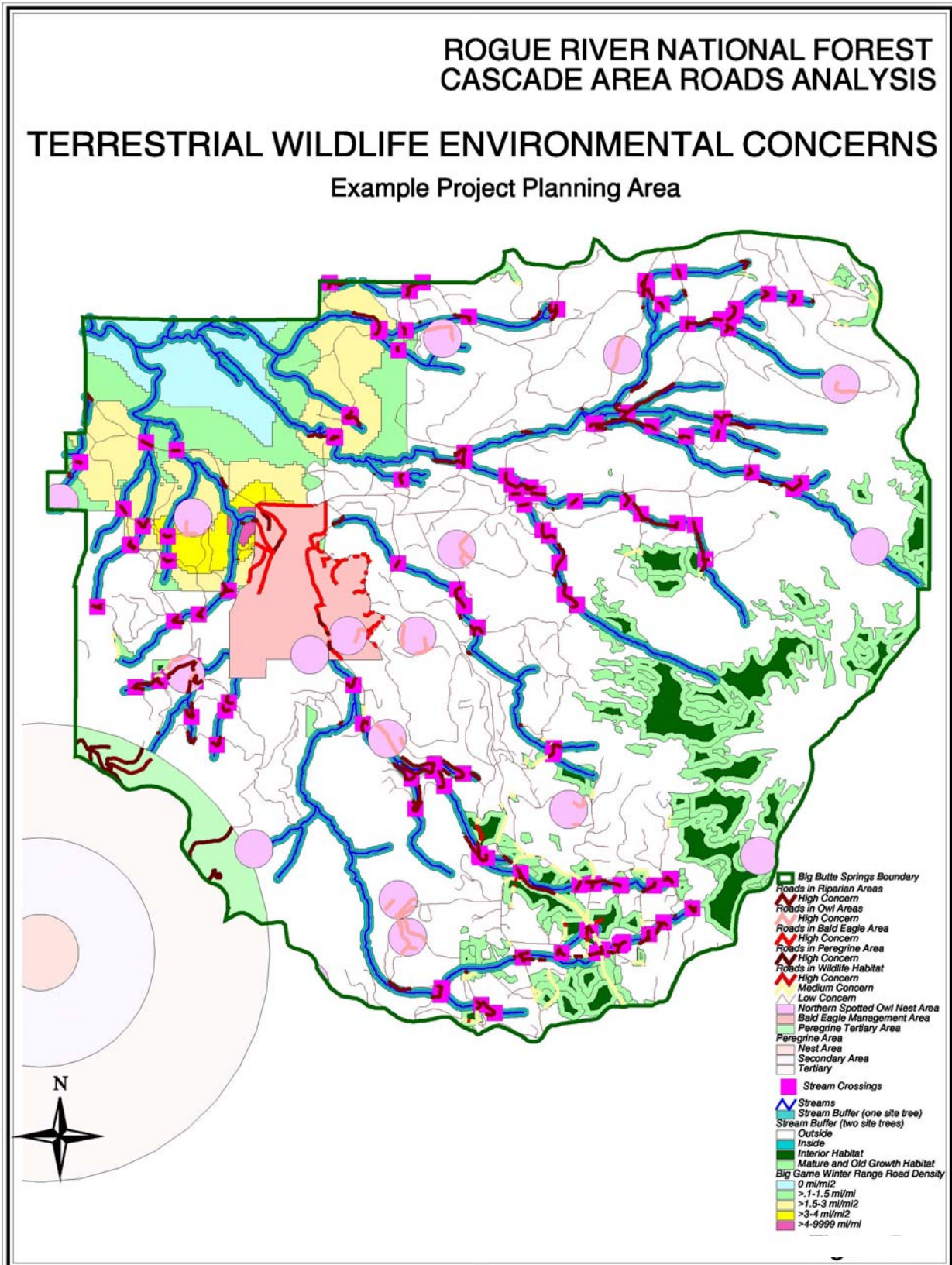
Summary Access and Environmental Rating - Cascade Area



MAP VI-3. Example - Aquatic Environmental Concerns - Cascade Area

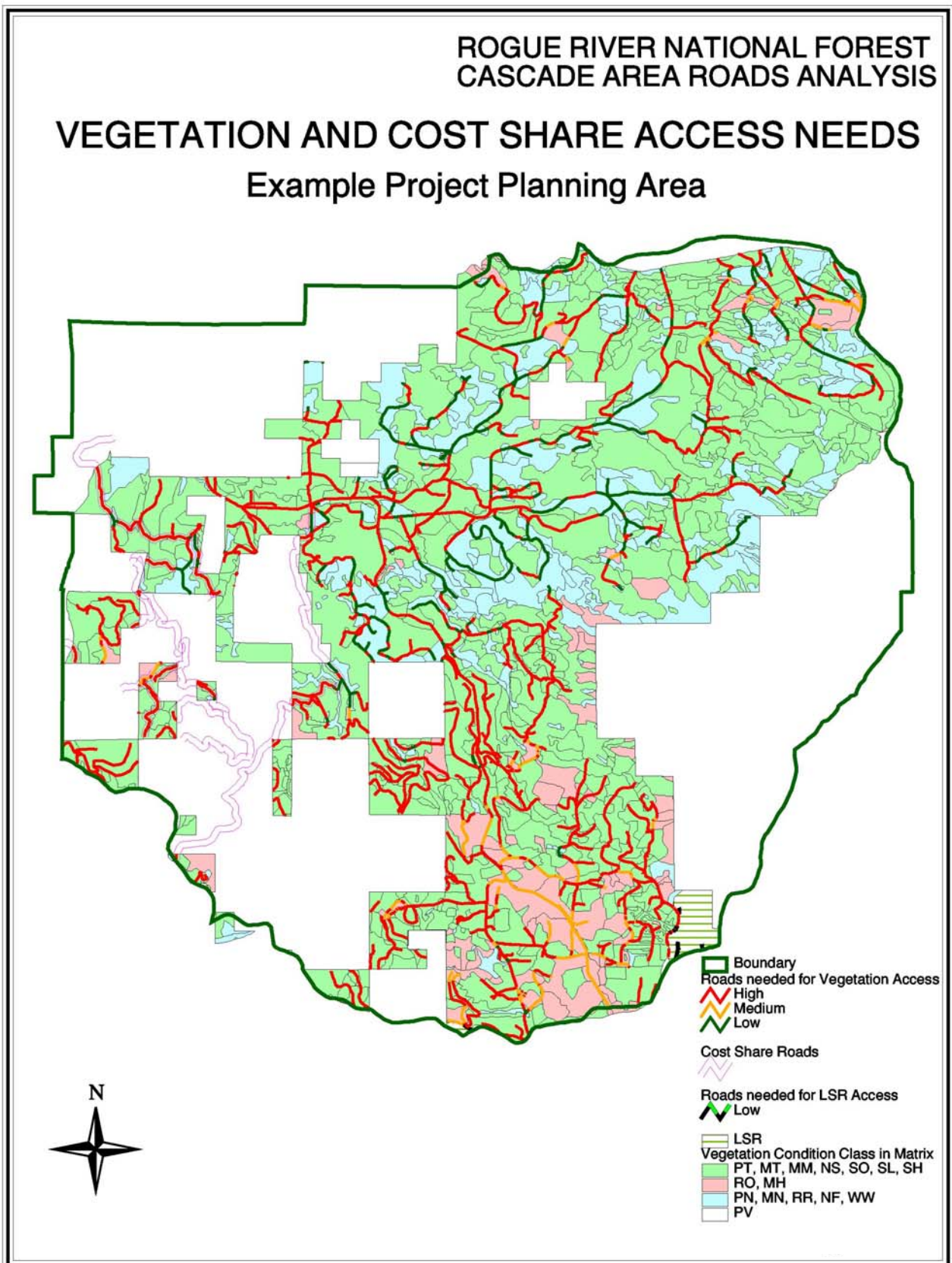


MAP VI-4. Example
Terrestrial Wildlife Environmental Concerns - Cascade Area



MAP VI-5. Example

Vegetation and Cost Share Access Needs - Cascade Area



MAP VI-6. Example - Fire and Recreation Access Needs - Cascade Area

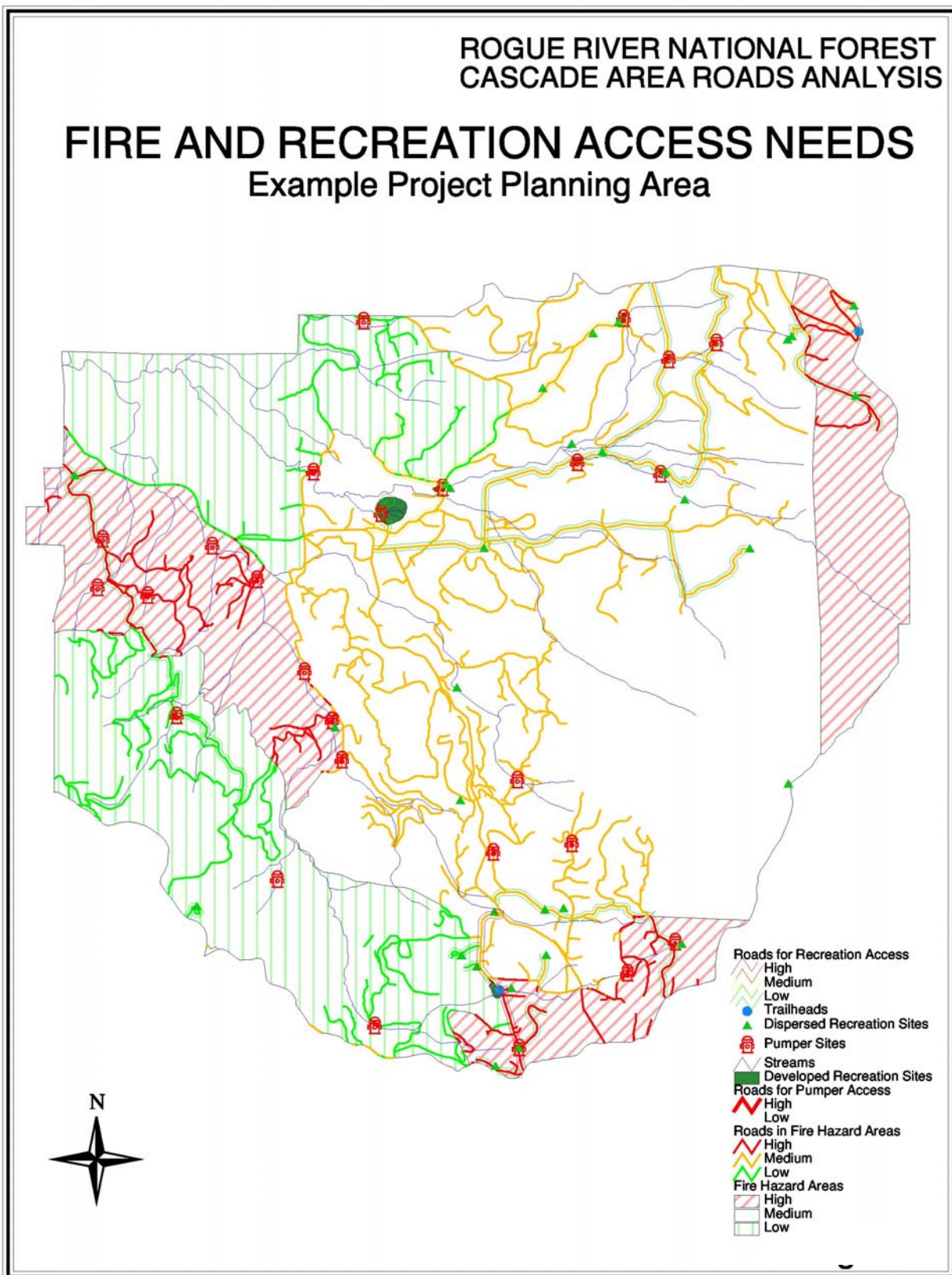


Table VI-1. Example Rating Process for Environmental Costs - Cascade Area

LENGTH	ID	HUC_CODE	HUC6_NAME	WOOD	RIP	KWS	MUNI	ERO	AQUA_SUM	INSIDE	INSIDE2	INSIDE3	RIP	COR	BEMACODE	PER	OWL	DEN	WILD_SUM	AQU_WILD_S
16326.29818	140	171003070801	Upper North Fork Little Butte Creek	3	3	3	0	2	11	1	1	1	3	3.00000	0	1	1	1	7	18
1006.71593	140	171003070802	Lower North Fork Little Butte Creek	3	3	3	0	2	11	1	1	1	3	3.00000	0	1	1	1	7	18
3.40553	1610000	171003070504	Sugar Pine Creek	3	3	3	0	0	9	1	1	1	3	3.00000	0	0	1	2	7	16
1483.20731	1610000	171003070504	Sugar Pine Creek	3	3	3	0	0	9	1	1	1	3	3.00000	0	0	1	2	7	16
23.94238	1610000			3	3	3	0	0	9	1	1	1	3	3.00000	0	0	1	2	7	16
1330.39391	1610900	171003070504	Sugar Pine Creek	3	3	3	0	1	10	1	1	1	3	3.00000	0	0	1	3	8	18
3541.88431	1610900	171003070504	Sugar Pine Creek	3	3	3	0	1	10	1	1	1	3	3.00000	0	0	1	3	8	18
2552.27242	1610920	171003070504	Sugar Pine Creek	3	1	3	0	1	8	1	1	1	1	1.00000	0	0	1	3	6	14
1784.31007	1610930	171003070504	Sugar Pine Creek	3	3	3	0	2	11	1	1	1	3	3.00000	0	0	1	3	8	19
586.11689	1610951	171003070504	Sugar Pine Creek	3	3	3	0	3	12	100	1	2	3	3.00000	0	0	1	3	9	21
128.42087	1610955	171003070504	Sugar Pine Creek	0	1	3	0	1	5	1	1	1	1	1.00000	0	0	3	3	8	13
337.05323	1610958	171003070504	Sugar Pine Creek	3	3	3	0	2	11	100	1	2	3	3.00000	0	0	3	3	11	22
1464.71536	1610970	171003070504	Sugar Pine Creek	3	3	3	0	0	9	100	1	2	3	3.00000	0	0	1	3	0	9
63.52792	1610970	171003070504	Sugar Pine Creek	3	3	3	0	0	9	100	1	2	3	3.00000	0	0	1	3	0	9
144.17599	1610970	171003070504	Sugar Pine Creek	3	3	3	0	0	9	100	1	2	3	3.00000	0	0	1	3	0	9
66.06127	1610970	171003070505	Flat Creek	3	3	3	0	0	9	100	1	2	3	3.00000	0	0	1	3	0	9
3117.32143	1610980	171003070504	Sugar Pine Creek	3	3	3	0	2	11	100	100	3	3	3.00000	0	0	1	3	10	21
449.40548	1610985	171003070504	Sugar Pine Creek	3	3	3	0	2	11	1	1	1	3	3.00000	0	0	1	3	8	19
5407.94830	230	171003070101	Rogue River Headwaters	1	3	0	0	0	4	1	1	1	3	3.00000	0	1	1	2	8	12
2103.64036	230	171003070101	Rogue River Headwaters	1	3	0	0	0	4	1	1	1	3	3.00000	0	1	1	2	8	12
696.38286	230	171003070102	Hamaker Creek	1	3	0	0	0	4	1	1	1	3	3.00000	0	1	1	2	8	12
401.33036	230	171003070102	Hamaker Creek	1	3	0	0	0	4	1	1	1	3	3.00000	0	1	1	2	8	12
2352.63798	230	171003070103	Muir Creek	1	3	0	0	0	4	1	1	1	3	3.00000	0	1	1	2	8	12
3691.34884	230	171003070103	Muir Creek	1	3	0	0	0	4	1	1	1	3	3.00000	0	1	1	2	8	12
1426.59831	230	171003070103	Muir Creek	1	3	0	0	0	4	1	1	1	3	3.00000	0	1	1	2	8	12
236.97272	230	171003070103	Muir Creek	1	3	0	0	0	4	1	1	1	3	3.00000	0	1	1	2	8	12
4432.52894	230	171003070105	National Creek	1	3	0	0	0	4	1	1	1	3	3.00000	0	1	1	2	8	12
4071.67323	230	171003070107	Foster-Copeland Creek	1	3	0	0	0	4	1	1	1	3	3.00000	0	1	1	2	8	12
6508.59710	230	171003070109	Bybee Creek	1	3	0	0	0	4	1	1	1	3	3.00000	0	1	1	2	8	12
1597.87874	230	171003070110	Castle Creek	1	3	0	0	0	4	1	1	1	3	3.00000	0	1	1	2	8	12

Table VI-2. Example Rating Process for Access Benefits - Cascade Area

LENGTH	ID	HUC_CODE	HUC6_NAME	SHARE_COST	DISP	DEV	TRAILHEAD	PUMP	FIRERISK	CONCLASS	VEG	LSR	ACCESS SCORE
348.78758	2800100	171003070403	Willow Creek					1	2				3
114.24491	2800100	171003070403	Willow Creek					1	2				3
39.61756	2800100	171003070403	Willow Creek					1	2				3
11.40770	2800100	171003070403	Willow Creek					1	2				3
388.06579	2800100	171003070403	Willow Creek					1	2				3
81.60128	2800100	171003070403	Willow Creek					1	2				3
198.14357	2800100	171003070403	Willow Creek					1	2				3
1259.33758	2800102	171003070403	Willow Creek					3	1				4
1886.60845	2800102	171003070403	Willow Creek					3	1				4
1022.11586	2800103	171003070403	Willow Creek					1	1	MT	3		5
421.84362	2800108	171003070403	Willow Creek					1	1	SO	3		5
687.78927	2800108	171003070403	Willow Creek					1	1	SO	3		5
306.01315	2800110	171003070403	Willow Creek					1	1	SO	3		5
59.05545	2800155	171003070403	Willow Creek					1	2				3
507.15342	3000150	171003070403	Willow Creek					1	1				2
728.58158	3000170	171003070403	Willow Creek					1	1	PT	3		5
283.77750	3000171	171003070403	Willow Creek					1	1	PT	3		5
516.53136	3000200	171003070402	Fourbit Creek					1	2	RR	1		4
1201.51585	3015000	171003070403	Willow Creek	3	3			3	1				10
1156.29120	3015000	171003070403	Willow Creek	3	3			3	1				10
6853.01992	3015000	171003070403	Willow Creek	3	3			3	1				10
332.29174	3015000	171003070403	Willow Creek	3	3			3	1				10
914.67091	3015000	171003070404	Lower South Fork Big Butte Creek	3	3			3	1				10
592.30284	3015000	171003070404	Lower South Fork Big Butte Creek	3	3			3	1				10
41.98479	3015020	171003070404	Lower South Fork Big Butte Creek		3			1	3				7
319.74805	3015020	171003070404	Lower South Fork Big Butte Creek		3			1	3				7
373.70911	3015030	171003070404	Lower South Fork Big Butte Creek					1	3				4
269.34026	3015035	171003070404	Lower South Fork Big Butte Creek					1	3				4
3864.57871	3015100	171003070403	Willow Creek	3				1	3	SO	3		10
1121.58268	3015110	171003070403	Willow Creek					1	3	MT	3		7

C. Project Interdisciplinary Team Suggested Process

1. Review sub-watershed environmental rating map (Map VI-1) to understand context of the project planning or study area. High environmental cost sub-watersheds would logically receive a harder look at road management than sub-watersheds with low environmental cost. The sub-watershed cumulative environmental rating map represents a score for aquatic and terrestrial factors.

2. Look at the summary map for the project planning area of environmental and access ratings by road segment (Map VI-2). Nine possible combinations of ratings may be seen:

<u>Access Benefit</u>	<u>Environmental Cost</u>
Low	Low
Low	Medium
Low	High
Medium	Low
Medium	Medium
Medium	High
High	Low
High	Medium
High	High

3. The project team should consider ways to reduce maintenance and environmental costs on low access benefit roads, and look for ways to keep high access benefit roads open while mitigating the environmental cost. The first focus then would be on the high environmental cost roads and on the low access benefit roads.

4. The summary map is only the starting point to focus the attention of the team. The next step would be to look at the more detailed environmental and access maps (Maps VI-3, 4, 5, 6). to understand exactly where the environmental concerns and access needs are located along the road and to validate the information.

5. When the GIS map information is understood, then other information must be brought into consideration. Other information to be considered includes:

- Watershed Analyses
- Late Successional Reserve assessments
- Special use permits
- Long term monitoring facilities
- Rock quarry locations
- Mining claim access
- Private land access
- Factors identified in Appendix D of this document

6. Make road management recommendations (see following section D for more detailed information) considering the following:

- Roads to maintain as is or improve
- Reduce road maintenance level
- Defer road maintenance
- Change road design
- Decommission road by least cost and impact method
- Recommend appropriate entrance treatment (disguise entrance or barrier type)

By prioritizing our annual and cyclic road maintenance work, the Forest will optimize its use of current maintenance funds throughout the Forest.

D. List of Opportunities to Decrease Current Maintenance Costs

- Decommission more maintenance level one and two classified roads.
- Defer some decommissioning work components other than road entrance closure if current resource impacts are resource neutral.
- Change maintenance levels; four to three, three to two, two to one.
- Defer road maintenance work on roads with little or no use, maintenance level two and one roads specifically, if current resource impacts are neutral.
- Decommission maintenance level one roads substantially grown in with vegetation.
- Change double lane aggregate or native surfaced roads to single lane-surfaced roads.
- Remove culverts and replace with more maintenance free drainage structures such as drain-dips, grade-sags, cross-drains, etc.
- Place more aggregate surfaced roads into native surfaced categories if environmental impacts are neutral.
- Change roads that have ditch lines with ditch relief culverts to inslope/outslope roads with less maintenance intensive drainage structures such as cross-drains or grade-sags, thereby removing costly culvert and ditch line maintenance work.
- Have more road maintenance work accomplished by Road Use Permits by not collecting maintenance funds from timber hauled over Forest Service roads, thereby shifting road maintenance responsibilities from the Forest Service to the permittees.
- Use (when available) County Community Corrections Crews to perform labor-intensive maintenance work such as hand brushing, culvert work and hazard tree felling along with local contractors. Master Agreements have to be in place.
- Install more earth /log or boulder road entrance barriers versus gates.
- Change road standards by reducing road width from twelve to ten feet if commercial and/or administrative traffic no longer requires additional width where current conditions have changed critical and/or design vehicles needs from log trucks and low boys to fire pumper trucks or one-ton pickups.

E. Other Recommended Uses of Analysis Data

The results of queries from GIS will tally the factors by road segment. Project interdisciplinary teams can use the results to quantify potential impacts to stream channels by individual road segments within a sub-watershed. The summaries from this Roads Analysis will be used to rate the relative risk of impacts to the aquatic and riparian environment by the road system, at the sub-watershed (6th level HUC) scale. Interdisciplinary teams can aggregate this information to the watershed (5th level HUC) or sub-basin (4th level HUC) scale. It will also be possible to disaggregate the information to a drainage (7th level HUC) scale, if GIS files exist for these smaller watershed accounting units.

Further project level work will field check the validity of the risk ratings displayed in this Roads Analysis at the site scale for each road segment, and the potential cumulative impacts of roads to aquatic and riparian systems.

This information will be used to assess the road network in a sub-watershed and make road management recommendations to the decision maker for each road segment. Assessment of the local road impacts to an individual stream or sub-watershed may result in recommendations for road repairs, closures, decommissioning, or other actions involving portions of several different road segments that influence a particular stream.